

AMENDMENTS TO THE CLAIMS

1. (Currently amended) A method for producing a water-soluble porous, polymeric material comprising the steps of:

- (a) providing a C/W emulsion comprising an aqueous phase, a matrix building material in the form of a water-soluble polymeric material, a surfactant and a liquid CO₂ phase;
- (b) at least partially freezing the aqueous phase;
- (c) gasifying CO₂ from the liquid CO₂ phase to produce an intermediate porous material;
- (d) venting the gasified CO₂ from the intermediate porous material; and
- (e) freeze drying the intermediate porous material at least substantially to remove the aqueous phase and to form the water-soluble porous material; wherein said ~~porous material is water-soluble and said matrix building material is a water-soluble polymeric material~~ water-soluble polymeric material is substantially free of cross-linking such that said water-soluble porous material is able to substantially fully dissolve in water at 20 °C in less than 107 seconds.

2. (Original) A method for producing a porous material as claimed in 1, wherein the emulsion further comprises a dopant.

3. (Original) A method for producing a porous material as claimed in 2, wherein the dopant is substantially water-soluble.

4. (Previously presented) A method for producing a porous material as claimed in 2, wherein the dopant is selected from one or more of the following dopants: pharmaceutical actives, pharmaceutical salts, enzymes, dyes, oxidising agents, reducing agents, cleaning agents, reagents for organic synthesis, agrochemicals, fabric softeners, clothes care agents, bleaches, flavours, fragrances, vitamins or nutraceuticals, metal nanoparticles (e. g., metal hydrosols), inorganic nanoparticles, biological polymers (e. g., DNA, RNA), growth factors/cofactors, and live cells(e. g., stem cells).

5. (Previously presented) A method for producing a porous material as claimed in 1, wherein a substantially water-soluble inorganic or organic additive is additionally used.

6. (Original) A method for producing a porous material as claimed in 5, wherein the additive is selected from one or more of the following additives: partially hydrolysed silica precursors (i. e., a silica sol), other alkoxide sols, hydroxyapatite salts, and sodium silicate.

7.-8. (Canceled)

9. (Previously presented) A method for producing a porous material as claimed in 1, wherein the matrix building material is a vinyl polymer material.

10. (Previously presented) A method for producing a porous material as claimed in 1, wherein the matrix building material is selected from one or more of the following group of materials: poly(vinyl alcohol), dextran, sodium alginate, poly(aspartic acid), poly(ethylene glycol), poly(ethylene oxide), poly(vinyl pyrrolidone), poly(acrylic acid), poly(acrylic acid)-sodium salt, poly(acrylamide), poly(N-isopropyl acrylamide), poly(hydroxyethyl acrylate), poly(acrylic acid), poly(sodium styrene sulfonate), poly(2-acrylamido-2-methyl-1-propanesulfonic acid), polysaccharides, and cellulose derivatives.

11. (Canceled)

12. (Previously presented) A method for producing a porous material as claimed in 1, wherein the temperature of the emulsion is reduced to a temperature in the range of -5°C to -30°C.

13. (Previously presented) A method for producing a porous material as claimed in 1, wherein the CO₂ is gasified by means of depressurisation of the intermediate porous material.

14. (Previously presented) A method for producing a porous material as claimed in 1, wherein the surfactant is selected from one or more of the following list of surfactant: CTAB (cetyltrimethylammonium bromide), SDS (sodium dodecyl sulphate), pluronic surfactants, Brij 30 and Tween 40.

15. (Previously presented) A method for producing a porous material as claimed in 1, wherein the matrix building material is contained within the aqueous phase of the emulsion.

16. (Currently amended) A method for producing a porous material as claimed in 1, wherein the constituents of the emulsion are in the following quantities: the matrix building material is in the range of 5-20 % w/v and the surfactant is in the range of 5-20 % w/v in respect of H₂O and the CO₂ is in the range of 65-95 % v/v.

17. (Previously presented) A method for producing a porous material as claimed in 1, wherein the porous material is produced in the form of a monolithic block.

18. (Previously presented) A method for producing a porous material as claimed in 1, wherein the porous material is produced in the form of porous particles or beads.

19. (Previously presented) A method for producing a porous material as claimed in 1, wherein the emulsion further comprises an active ingredient for incorporation into the porous material.

20. (Original) A method for producing a porous material as claimed in 19, wherein the active ingredient is selected from one or more from the following group; pharmaceutical actives, pharmaceutical salts, enzymes, dyes, oxidising agents, reducing agents, cleaning agents, reagents for organic synthesis, agrochemicals, fabric softeners, clothes care agents, bleaches, flavours, fragrances, vitamins or nutraceuticals, metal nanoparticles (e. g., metal hydrosols), inorganic nanoparticles, biological polymers (e. g., DNA, RNA), growth factors/cofactors, and live cells (e. g., stem cells).

21.-22. (Canceled)

23. (Currently amended) A water-soluble porous material obtained by the method according to claim 1, wherein the material is characterised by having

- (a) a median pore diameter within the range of 5-100 microns;
- (b) a total pore volume in the range of 8-15 cm³/g when approximately 80%v/v

C₆₀ is used; and

- (c) a bulk density typically in the range 0.02-0.06 g/cm³, and being able to substantially fully dissolve in water at 20 °C in less than 107 seconds.

24. (Previously presented) A water-soluble porous material according to claim 23, characterised by having substantially no solvent residue remaining in the material that arises from the internal template phase.
25. (Previously presented) A water-soluble porous material according to claim 23, being produced in the form of a moulded, monolithic block that substantially conforms to the shape of a vessel in which it is produced.
26. (Currently amended) A water-soluble porous material comprising a water-soluble polymeric matrix, which matrix comprises substantially no residual organic solvent, said porous material being able to substantially fully dissolve in water at 20 °C in less than 107 seconds.
27. (Currently amended) A water-soluble porous material according to 26 obtainable by a method which utilises substantially no organic solvent, hence the matrix being substantially free from any residual organic solvent component.
28. (Currently amended) A water-soluble porous material according to 26 comprising surfactant moieties entangled with the polymeric matrix.
29. (Currently amended) A water-soluble porous material according to 28, wherein the presence of surfactant moieties results from the formation of the porous material from a C/W emulsion comprising the surfactant moieties.
30. (Currently amended) A water-soluble porous material as claimed in [[21]] 26, wherein the material is used for one or more of the following applications: biomaterials, ~~tissue supports~~, food materials, ~~tissue scaffolding~~, DNA storage, ~~absorbent~~, controlled release matrices, ~~scaffolds for sensor materials~~, ~~wound healing matrices~~, agrochemical release, reagent release (e. g., for chemical reactions), ~~scaffold for combinatorial chemistry~~, molecular separations and diagnostic reagent release.